

1     WHAT IS CLAIMED IS

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1. A liquid crystal display device,  
comprising:

a first substrate and a second substrate  
sandwiching a liquid crystal layer therebetween;

10     a first polarizer disposed adjacent to said  
first substrate at a side opposite to a side of said  
first polarizer facing said liquid crystal layer, with  
a first gap between said first polarizer and said  
first substrate;

15     a second polarizer disposed adjacent to said  
second substrate at a side opposite to a side of said  
second polarizer facing said liquid crystal layer,  
with a second gap between said second polarizer and  
said second substrate;

20     at least one of said first and second gaps  
including therein a first retardation film having a  
positive optical anisotropy and a second retardation  
film having a negative optical anisotropy, such that  
said first retardation film is disposed closer to said  
25     liquid crystal layer with respect to said second  
retardation film.

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2. A liquid crystal display device as  
claimed in claim 1, wherein said liquid crystal layer  
is formed of a positive liquid crystal having a  
positive dielectric anisotropy.

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1           3. A liquid crystal display device as  
claimed in claim 1, wherein said liquid crystal layer  
is formed of a negative liquid crystal having a  
negative dielectric anisotropy.

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          4. A liquid crystal display device,  
10 comprising:  
          a first substrate and a second substrate  
sandwiching a liquid crystal layer therebetween;  
          a first polarizer disposed adjacent to said  
first substrate at a side opposite to a side of said  
15 first polarizer facing said liquid crystal layer, with  
a first gap between said first polarizer and said  
first substrate;  
          a second polarizer disposed adjacent to said  
second substrate at a side opposite to a side of said  
20 second polarizer facing said liquid crystal layer,  
with a second gap between said second polarizer and  
said second substrate;  
          at least one of said first and second gaps  
including therein an optically biaxial retardation  
25 film.

30           5. A liquid crystal display device as  
claimed in claim 4, wherein said liquid crystal layer  
is formed of a positive liquid crystal having a  
positive dielectric anisotropy.

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1           6. A liquid crystal display device as  
claimed in claim 4, wherein said liquid crystal layer  
is formed of a negative liquid crystal having a  
negative dielectric anisotropy.

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          7. A liquid crystal display device,  
10 comprising:  
first and second substrates disposed  
substantially parallel to each other, said first  
substrate having a first principal surface at a side  
thereof facing said second substrate, said second  
15 substrate having a second principal surface at a side  
thereof facing said first substrate;

a first electrode pattern provided on said  
first principal surface of said first substrate;

20 a second electrode pattern provided on said  
second principal surface of said second substrate;

a first molecular orientation film disposed  
on said first principal surface of said first  
substrate so as to cover said first electrode pattern;

25 a second molecular orientation film disposed  
on said second principal surface of said second  
substrate so as to cover said second electrode  
pattern;

a liquid crystal layer confined between said  
first and second molecular orientation films;

30 said liquid crystal layer containing liquid  
molecules such that a major axis of said liquid  
crystal molecule aligns generally perpendicularly to  
at least one of said first and second principal  
surfaces;

35 said liquid crystal layer having a  
retardation of about 80 nm or more but below about 400  
nm.

1           8. A liquid crystal display device as  
claimed in claim 7, wherein said liquid crystal  
molecules have a positive dielectric anisotropy.

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          9. A liquid crystal display device as  
claimed in claim 7, wherein said first and second  
10 substrates form, together with said liquid crystal  
layer interposed therebetween, a liquid crystal panel,  
said liquid crystal display device further including a  
first polarizer having a first optical absorption axis  
and a second polarizer having a second optical  
15 absorption axis respectively at a first side and a  
second opposite side of said liquid crystal panel, in  
a state that said first optical absorption axis and  
said second optical absorption axis form an angle of  
about 90° with each other and such that said first  
20 optical absorption axis forms an angle of about 45 °  
with respect to a central axis bisecting a twist angle  
of said liquid crystal molecules in said liquid  
crystal layer.

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          10. A liquid crystal display device as  
claimed in claim 9, wherein said liquid crystal  
30 display device further includes, at least in one of a  
first gap formed between said first substrate and said  
first polarizer and a second gap formed between said  
second substrate and said second polarizer, a first  
retardation film having a positive optical anisotropy  
35 and a second retardation film having a negative  
optical anisotropy, such that said second retardation  
film is located at a far side of said liquid crystal

1 panel with respect to said first retardation film.

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11. A liquid crystal display device as  
claimed in claim 10, wherein said first retardation  
film is disposed such that an optical axis thereof  
extends in a direction parallel to said optical  
10 absorption axis of one of said first and second  
polarizers that is located adjacent to said first  
retardation film.

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12. A liquid crystal display device as  
claimed in claim 10, wherein said first retardation  
film is disposed such that an optical axis thereof  
20 extends perpendicularly to said optical absorption  
axis of one of said first and second polarizers that  
is located adjacent to said first retardation film.

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13. A liquid crystal display device as  
claimed in claim 10, wherein said first retardation  
film has a retardation of smaller than about 120 nm.  
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14. A liquid crystal display device as  
35 claimed in claim 13, wherein said first retardation  
film is formed of a resin having a norbornene  
structure in a principal chain thereof.

1           15. A liquid crystal display device as  
            claimed in claim 10, wherein said second retardation  
            film is disposed such that an optical axis of said  
5           second retardation film extends in a direction  
            substantially perpendicularly to at least one of said  
            first and second principal surfaces.

10           16. A liquid crystal display device as  
            claimed in claim 10, wherein said second retardation  
            film has a retardation equal to or smaller than twice  
            said retardation of said liquid crystal layer.

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            17. A liquid crystal display device as  
20           claimed in claim 9, wherein said liquid crystal  
            display device further includes an optically biaxial  
            retardation film between one of a first gap formed  
            between said first substrate and said first polarizer  
            and a second gap formed between said second substrate  
25           and said second polarizer.

30           18. A liquid crystal display device as  
            claimed in claim 17, wherein said optically biaxial  
            retardation film has a retardation axis within a plane  
            parallel to said first and second principal surfaces,  
            and wherein said retardation axis extends parallel to  
35           said absorption axis of one of said first and second  
            polarizers that is located adjacent to said optically  
            biaxial retardation film.

1            19. A liquid crystal display device as  
claimed in claim 17, wherein said optically biaxial  
retardation film has a retardation axis within a plane  
parallel to said first and second principal surfaces,  
5            and wherein said retardation axis extends  
perpendicularly to said optical absorption axis of one  
of said first and second polarizers that is located  
adjacent to said optically biaxial retardation film.

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            20. A liquid crystal display device as  
claimed in claim 17, wherein said optically biaxial  
15            retardation film has an in-plane retardation of  
smaller than about 120 nm.

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            21. A liquid crystal display device as  
claimed in claim 17, wherein said optically biaxial  
retardation film has a retardation smaller than about  
twice said retardation of said liquid crystal layer in  
25            a direction perpendicular to said first and second  
principal surfaces.

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            22. A liquid crystal display device as  
claimed in claim 9, wherein said liquid crystal  
display device further includes first and second  
optically uniaxial retardation films respectively in a  
35            first gap formed between said first substrate and said  
first polarizer and in a second gap formed between  
said second substrate and said second polarizer.

1           23. A liquid crystal display device as  
claimed in claim 22, wherein said first and second  
optically uniaxial retardation films are disposed such  
that each of said uniaxial retardation films has a  
5       retardation axis such that said retardation axis  
extends parallel to said optical absorption axis of  
one of said first and second polarizers adjacent to  
said optically uniaxial retardation film.

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          24. A liquid crystal display device as  
claimed in claim 22, wherein said first and second  
15       optically uniaxial retardation films are disposed such  
that each of said uniaxial retardation films has a  
retardation axis such that said retardation axis  
extends perpendicularly to said optical absorption  
axis of one of said first and second polarizers  
20       adjacent to said optically uniaxial retardation film.

25           25. A liquid crystal display device as  
claimed in claim 22, wherein each of said first and  
second optically uniaxial retardation films has an in-  
plane retardation of smaller than about 300 nm.

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          26. A liquid crystal display device as  
claimed in claim 25, wherein each of said first and  
35       second optically uniaxial retardation films is formed  
of a resin having a norbornene structure in a  
principal chain thereof.



1           27. A liquid crystal display device as  
claimed in claim 7, wherein said first and second  
substrates form, together with said liquid crystal  
layer interposed therebetween, a liquid crystal panel,  
5   said liquid crystal display device further includes a  
first polarizer having a first optical absorption axis  
and a second polarizer having a second optical  
absorption axis respectively at a first side and a  
second opposite side of said liquid crystal panel, in  
10   a state that said first optical absorption axis and  
said second optical absorption axis form an angle of  
about 90° with each other, said liquid crystal display  
device further includes first and second retardation  
films respectively having a first retardation axis and  
15   a second retardation axis between said liquid crystal  
panel and said second polarizer, such that said first  
retardation film is located closer to said liquid  
crystal panel with respect to said second liquid  
crystal panel and such that said first retardation  
20   axis extends in a direction perpendicularly to a  
direction of said second optical absorption axis of  
said second polarizer.

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